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The cause of earthquakes.

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The Cause of Earthquakes

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THIS publication gives first, the real cause of the earthquake. Second, the reason for the long interval between destructive earthquakes in San Francisco. Third, the reason they came at the early hour they did.

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By SCIENTIA.

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Oakland January 14th. 1908

To the unbiased mind and able head of Stanford, my old friend, Dr. David Starr Jordan, the author sends with his compliments this opening chapter of the real cause.

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NOTE.

The author, a scientist of long standing, withholds his name from this publication, because the nature of the scientific truth he unfolds will not be any more acceptable to the powerful people of this land than the truths uttered by Christ to the Scribes and the Pharissees. Christ, being God, had no fear, while this author is only a poor plodding creature, dependent on the powerful for the position that gives him his daily bread.

The author has covered his identity from all but two outside friends, through whose agency he will be able to meet and confute all points of controversy.

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CAUSE OF EARTHQUAKES

In order to explain the cause of earthquakes, it must be remembered that a globe revolving through space at a speed this world does, and at such perfect precision that no change has ever occurred in its exact movement, must be perfectly balanced equipose at every instant of time, otherwise an irregular motion would occur which would destroy regularity.

But few if any scientists believe this world to be a solid ball. Nearly all have agreed there is a shell of greater or less thickness around its surface, enclosing a molten mass of heat, fire. They claim the earth is cooling, causing the contraction of the crust, which with volcanic disturbance causes earthquakes.

The fire enclosed in the shell is correct, and contraction does take place, causing one portion of the land to rise and another to subside below the waters of the earth, but it is not caused by the cooling of the earth or the decrease of the interior fire.

Our globe, which we call the earth, is more sensitive to force or injury than any delicate instrument man can make. Floating in an ocean of Electricity, which records instantly throughout its entire space each sound made on the earth, every disturbance to the earth's crust is vibrated at every point of its frame.

All of God's works, like their Creator, are perfect, and carry within their mechanism power to force perfect obedience by natural laws to the regular movements He gave

them at creation. If man in his destructive works injures and obstructs the easy and safe plan, the same law forces another plan most injurious to man.

No earthquake ever was or ever will be caused by volcanic action. Local jars by volcanic explosions have occurred and will occur, but all volcanic action is caused by earthquakes or the cause of earthquakes.

All earthquakes are caused by disturbance of the outside crust on the surface of the earth, which tend to destroy the perfect equilibrium, or the balance of the globe. Each side and every part must carry the same weight, which man in his removals of earth, rock, ores, oil, coal, and the building of cities, is continually changing.

If man would go no further than changing weight from one point to another, the easy plan for regularity of balance might maintain itself; but he must create great explosions and fight great battles with jar and explosions which affect the atmosphere, causing climatic changes out of the regular order. These produce great weight on the surface by rain, which at that period of time should be left dry, water and weight being forced up from a point requiring weight.

Man has obstructed the easy plan of keeping the globe in perfect trim, but cannot prevent the more hurtful force taking its place. To illustrate: We will say, at a certain point unnatural causes have caused too much weight, a large slab from the dome of the under side of our shell slips off, which causes a shake on the surface and corrects the balance. But falling into the molten fire, acting as new fuel in the production of greater heat and gases, which must find vent to the surface of the earth through chimneys we call volcanoes, these volcanoes expell the surplus materials and gases to the surface with great force and assist man in disturbing the atmosphere and causing climatic changes.

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When extra great over-weight occurs in one place, large masses of the under-crust have to be detached from the dome, which causes a contraction of the strata at that point of the shell, to keep perfect the arch of the dome.

In this instance a great earthquake has taken place on the surface with two kinds of shocks; one a jar by the breaking off of the large mass from the shell and the other by the instantaneous contraction of the strata which causes a grinding vibratory motion and shake.

Contraction must take place quickly, as it no doubt did at this time, supplying, as it were, the key to the arch and preventing the giving way of a vast area of surface. Delayed contraction no doubt caused the sinking of the space now occupied by the bay with a mile in length of the coast range giving an outlet to the interior water through the Golden Gate.

In 1904-1905 the climate of California was changed to such an extent that the Fall of 1904 was dry. The heavy rains that should have fallen in December and January did not come on until February and March, due no doubt to the atmospheric disturbance caused by the Russo-Japanese war. This water taken up from the surface at an unnatural time and deposited in California out of season destroyed the equilibrium of the two points and made an adjustment of the weight of the two parts on the crust compulsory.

Fortunately San Francisco and vicinity was saved from a severe earthquake in 1905 by the giving way of small slabs of the under-crusts, which caused the thirty or more small shakes that year. These masses, with like giving away in other parts of the world, helped to feed the force of volcanic activity, causing Vesuvius and other chimneys to bring about a great disturbance in the atmosphere in various parts of the earth, which caused another change in the California

rainy season in 1905-1906, bringing again tremendous rains and snow out of season, giving to this portion of California weight that should have been elsewhere on the surface of the earth to counter-balance our natural rainy season's weight.

This extra weight, coming so soon again over an already weakened undercrust, caused a vast body to give way, so great that immediate contraction could not be avoided to refill the broken place of the arch. This brought about a twofold shock, the jar from the breaking loose, followed instantaneously by the grinding vibratory motion of the contraction of the crust.

This contraction caused either a subsidence or rise on our coast lines and breaks and slips in our stratifications on or near the surface.

Heavy, high buildings should not be built around the bay of San Francisco. Weight should be avoided as much as possible in this sedimentary basin on which natural conditions force additional weight each year.

Nearly three-quarters of the watershed of the State of California contribute its sand and silt, which increases yearly the weight on the bed of the bay.

San Francisco will ever continue to be a great business center, commercially speaking; but the people surrounding the bay should not shut their eyes to the facts or be deluded by interested scientists who have never yet been able to give a reasonable statement as to the cause of earthquakes. The people should remember that each succeeding great earthquake has been more and more severe, and will continue to be so as increased weight is added to the bay basin.

In October, 1866, we had the first severe earthquake, which broke dishes, plate glass and vases, etc., without doing much other damage besides frightening the people con-

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siderably. It was only a lateral quake, the giving way of a considerable mass of the undercrust; not enough to cause contraction.

In October, 1868, just two years after. we had a very severe earthquake, that damaged the city to the extent of several millions of dollars. which was figured down by a committee of property-owners, who reported the damage at three hundred and fifty thousand dollars.

This quake was also a lateral quake, lasting thirty seconds. It was many times as severe as the '66 quake, but opened no fissure to the surface. The mass of undercrust that gave way must have been much greater than in '66, but not great enough to require contraction, and therefore had no crushing vibratory motion.

At that time San Francisco was having a boom in real estate, which ended with the completion of the transcontinental railroad, and all life seemed to go out of the value of property for thirty-four years. Extension of street railways during that period caused a wide and extensive spread of frame lightweight buildings, mostly residences. During this period of time but very little weight in heavy buildings was placed on the surface of the city proper and equilibrium was maintained by the several small earthquakes or droppings from the undercrust each year.

The Spanish war started a new boom in real estate, and a new class of heavy sky-scraping buildings were erected in many parts of the city. Greater and greater weight was placed on this tender crust, the last straw of weight it could stand was added by the inflowing tide on the morning of the 18th of April, and we had the up-to-date great earthquake, which opened fissures from the undercrust to the surface, and because of the vast slide of the undercrust made quick contraction or a total submergence of a vast section of the basin a question of a very few minutes' time.

Fortunately immediate contraction followed. The grinding together of the rough masses caused that never-to-be-forgotten rasping vibratory motion.

It seems that it will require a greater and more costly lesson before the property-owners of San Francisco can wake up to the facts. Scientists subservient to the desires of property-holders have fished up comforting reasons for their statements published many times in the daily papers, that another great earthquake cannot occur in less time than forty or fifty years. There cannot possibly be any data for such statements except the length of time between the '68 and 1906 quake. They have forgotten or do not care to remember the '66 severe shake, from which time rapid heavy building went on to the still nearer earthquake of '68, just two years after. Then came the long stagnation of real estate, during which time but few heavy buildings were erected.

The thirty or forty small shakes in 1905 were only so many droppings from the undercrust below, caused by the over-weight above, which proved the roof from below was bulging. It is not the case, as the wise ones proclaimed, that many light shocks are a good indication, a sure sign of no heavy ones.

Take warning in time. Don't build heavy, high buildings. Use as much of the old material as possible. That refuse is only additional weight left on the old tender site. Remember, what you call rock for a foundation is as a rule a turned-over mass on quicksand foundation, and at best is only a sedimentary rock.

Add great weight on both sides of the bay. It is true contraction has taken place, but it is new and tender. The

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over-weight may be completed by a flood-tide in the middle of the day. Remember that each great shake has been more and more severe as you have added weight above. It has caused another giving way below that has required much greater contraction. Do you think any steel thing seven, eight or ten more stories high that man can build can stand a many times harder vibrating, twisting motion one minute, with a possible two minutes' duration? Remember, if the last shake had come in the middle of the day, the number of dead would have been so great in the city and around the bay that the people of the mountains would have had to come down to bury them.

If the flood-tide, with its two or more feet in depth of water spread over the bay (which weight undoubtedly caused the break and quake) instead of coming in around 6 o'clock a. m., had come that morning at 11 or 12 o'clock, who could estimate the vast loss of life, not only in San Francisco, but other towns around the bay?

The inflow of the flood-tide around 6 o'clock a. m. on the 18th of April, as it was around 8 o'clock a. m. at the time of the heavy shock in '68, shows each shock was caused by the added increased weight of the tide.

The author is convinced that the bay of San Francisco will in time command the commerce of the world; also is quite sure no like size spot on this earth can compare with the climate around the bay of San Francisco, for comfort and health, with ample wealth of soil to produce all that is pleasant to see or taste.

Yet after thirty-five years' study of the subject matter of this paper, the author is sure that a greater disaster in loss of life and property will fall on San Francisco and its surroundings before her rebuilding is complete, if her citizens

persist in building sky-scraping buildings of iron, steel, stone and brick.

Why is it that so many scientists give inklings of the true cause of earthquakes and do not pursue the subject to its logical conclusion? Do they doubt their own capacities to reason on cause and effect in a field ripe and one overflowing with facts that point to but one cause?

These same scientists will give volumes of information about planets and suns millions and billions of miles away, but when it comes to facts about the earth we live on, that interests mankind most, they will shove all the potent possibilities behind old threadbare theories or call them coincidences.

Professor Serviss in a recent communication gives some pertinent facts as to cause and effect of earthquakes (which we quote). But gets the horse behind the cart, and makes the effect the cause, and ruins the whole subject by hiding behind coincidence.

DID THE CALIFORNIA QUAKE ORIGINATE IN BERING SEA.

By Garrett P. Serviss.

A question that will probably be long debated among geologists, and that possesses a keen interest for the people of San Francisco and the Pacific Coast in general, is whether the new steam-belching island thrust up from the bottom of Bering sea coincidently with the occurrence of the San Francisco earthquake had any causal connection

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with that earthquake or not. Just how close the coincidence was in time between the birth of the new volcanic island and the shock 2000 miles away cannot be told, because nobody happened to see the prodigious mass of smoking and steaming lava at the moment of its emergence from the sea. It seems to have come to the surface and to have attained an elevation of several hundred feet without causing any great disturbance except in its immediate neighborhood. But the water is deep around it, and the imagination is stirred at the thought of the immense power that must have acted beneath the sea bottom in order to elevate so vast a weight. All the mightiest engines in the world coupled together could not have lifted a thousandth part of it a single foot.

The strongest argument adduced in support of the view that there was a connection between the upthrusting of this island and the California earthquake is, perhaps, the fact, pointed out by President David Starr Jordan, that the great earthquake rift, 200 miles in length, which extended through the coast range in California, would, if produced northward to Bering sea, pass close to the new island. Moreover, this rift was greatest and the effects of the earthquake were most violent where it entered the sea in Mendocino county. Two hundred miles is about one-tenth of the distance separating San Francisco from the scene of the outbreak in Bering sea. That a crack in the earth's crust of so great a length might be formed is possible, but the absence of concurrent disturbances in the sea or along the coast between California and Alaska seems to oppose the supposition. Upon the whole the evidence thus far obtained favors the view that the simultaneous occurrence of the two events was a coincidence. But another curious coincidence must be added in the eruption of Vesu-

vius, which happened so short a time before the destruction of San Francisco. The truth, no doubt, is that all three of these great outbreaks of subterranean forces, as well as the Valparaiso earthquake later in the summer, were due to a common cause. For reasons not yet clearly discriminated the earth has paroxysms of internal disturbance, during which regions separated by thousands of miles may be simultaneously affected.

Another reason for thinking that the outbreak in Bering sea was not the cause of the earthquake is that several times before new islands have been thrust up near the same spot without any disturbance being felt on the California coast.

Professor Burckhalter tells us that the recent eleven seconds' shake was caused by contraction of the earth, which is about the one thousandth time since '49 that he and his kind of scientists have had the earth contract around the bay of San Francisco.

How many more contractions will we have until real estate has shrunk to half its size in that region?

Professor Burckhalter considers small earthquakes beneficial. Does he really believe the loss from the under foundation of San Francisco of many thousand of acres which it would require to cause one hundred square miles to shake eleven seconds beneficial?

Did the Professor ever see a cave in a deep hydraulic mine —how a small block will first drop off, then a larger, and still another, which informs the miner that the great bank, with its hundreds of thousands of tons, will soon give way and fall? So it is under this thin earthquake region of San Francisco. Many small droppings occur, indicated by the

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small quakes, as the weight is increased on the surface, until finally the key of the arch gives way and a strip three hundred to five hundred miles in length, several miles in width gives way, opening fissures to the surface hundreds of miles in length. Then the much-talked-of contraction of the earth does take place, caused by the great pressure of the surrounding crust. This quick contraction is all that will save the whole region from being engulfed.

In the earthquake of the 18th of April the rent in the undercrust was so long and wide the side pressure brought about immediate contraction. The millions of acres of undercrust, with their oil, coal and vast number of mineralized stone, fed the central fires below. The volume of heat, gas and boiling matter was so great that vent to the surface was found in a weak part of the crust in Bering sea. So we find it was not the upheaval in Bering sea that caused the San Francisco earthquake, but the earthquake here that caused the upheaval there. Observations for many years have shown the great earthquakes in Italy or Sicily have been the cause of the eruption of Vesuvius, as the '66, '68 and 1906 earthquakes caused eruptions in Bering sea.

If contraction in some future great earthquake in San Francisco should be delayed, the gases and heat created by the larger amount of crust might force a more immediate chimney, in which case the cap covering Mount Diablo might be blown off. This nearby volcanic chimney would not, however, relieve us from earthquakes.

Volcanic disturbances do not cause earthquakes, but earthquakes cause volcanic disturbances.

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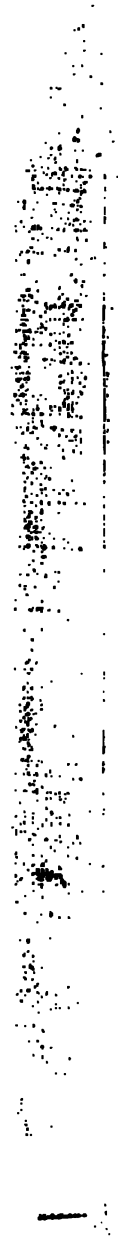

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